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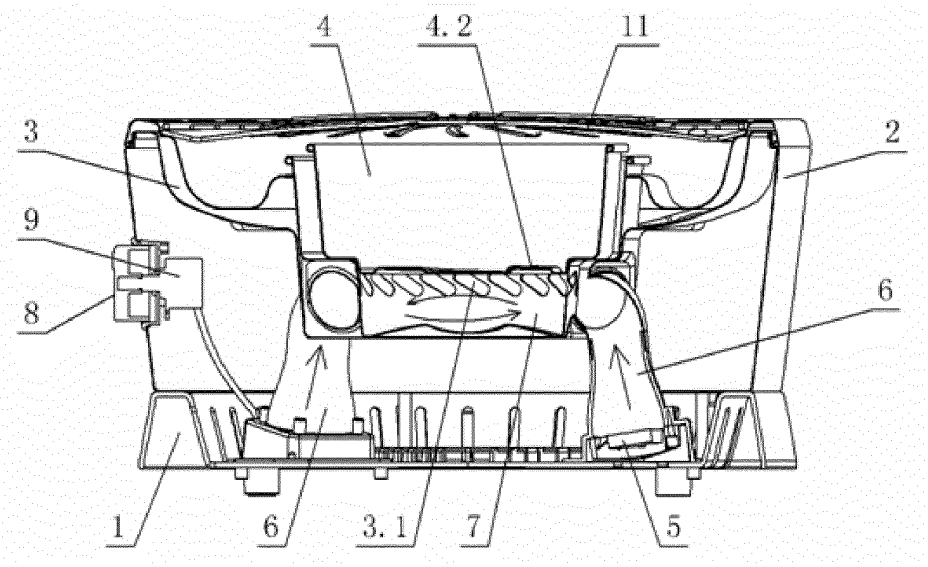
(54) **SMOKELESS GRILL**

(57) A kind of smokeless barbecue grill, comprises a base and the case placed above the base, which is a hollow structure and above it there is a bracket containing a charcoal tray; one or more fans are arranged on the base; the fan of the barbecue grill is provided with one or more air ducts, which is tilted and bended and forms a certain angle with the longitudinal direction of the barbecue grill. This invention, by improving the above structure, effectively solves the problems with present technology such as non-uniform temperature, non-adjustable fire, and the heavy smoke due to insufficient burning of charcoal when the barbecue grill is working. The invention features the simple and reasonable structure, low manufacturing cost, uniform and adjustable fire, simple and easy operation, reliable performance, energy-saving and environmentally-friendliness, clean and sanitary, sufficient burning of charcoal and no smoke, and high thermal efficiency, so the user may truly realize smokeless barbecue, moreover, the main components made of stainless steel, are durable and strongly practical.



Figur 2.1

EP 2 984 972 A1

Description

TECHNICAL FIELD

[0001] The invention involves a barbecue grill, specifically, a smokeless barbecue grill.

BACKGROUND TECHNOLOGY

[0002] The barbecue grill, also called baking oven, charcoal grill, refers to a device used to cook food with the heat generated from the burning of charcoal or pollution-free charcoal, usually an open or half-open structure. For the barbecue grill which cooks by means of air convection, the barbecue grill is usually provided with one or more heaters (charcoal braziers), and it heats air through the heater, and transfers the heat through the air convection to the food being cooked. However, owing to the unavoidable defect that during the process of energy transfer in the air, the temperature of the air close to the heater is higher while the temperature of the air far away from the heater is low, the barbecue grill always fails to efficiently and evenly cook the food and it will generate lots of oil smoke and dust, as well as the harmful gases caused by insufficient burning of charcoal such as carbon monoxide CO and smog, which impair the consumers' health and seriously pollute the environment.

[0003] To solve such defects as non-uniform temperature of cooking and large emission amount of smog, some existing barbecue grill cooks the food by arranging multiple heaters on two opposite sides of the cooking chamber, so as to increase the uniformity of heating. Moreover, to improve the uniformity of heating, some barbecue grill sets up the convection fans in the cooking chamber to accelerate the air convection and improve the uniformity of hot air distribution.

[0004] Although the existing barbecue grill solves the defects of non-uniformity of heating and large emission amount of smog to certain degree, its structure is complex, the production cost is high, and it cannot meet the users' use requirements. Therefore, it is necessary to make further improvement.

CONTENT OF THE INVENTION

[0005] The invention aims to provide a smokeless barbecue grill with simple and reasonable structure, low manufacturing cost, uniform and adjustable fire, simple and easy operation, reliable performance, energy-saving and environmentally-friendliness, clean and sanitary, and high thermal efficiency and may realize a smokeless barbecue grill for smokeless barbecue, in order to overcome the shortcomings in existing technology.

[0006] A smokeless barbecue grill designed for the above purpose, comprising a base and a case being placed above the base, is characterized in that: the case is a hollow structure and above it there is a bracket, containing a charcoal tray; one or more fans are arranged on the base; the fan of the barbecue grill is provided with one or more air ducts, which are tilted and bended and form an included angle with the longitudinal direction of the barbecue grill.

[0007] An ignition pan is arranged between the bracket and the charcoal tray, the fan is laterally below, on the low-side of, the ignition pan, and is connected to a sidewall of the ignition pan through the tilted air duct, the airflow generated by the fan enters the ignition pan through the air duct, and forms the rotational airflow in the ignition pan. Several air inlets are arranged in corresponding air duct of the bracket, the bearing part is arranged on the bracket, the charcoal tray is on the bearing part of bracket, and its bottom and the bottom of bracket form the ignition pan.

[0008] The bottom air duct of the charcoal tray is arranged with several air vents, which are distributed in spiral shape, the rotational convex part, arranged at the bottom of the charcoal tray along the direction of rotational airflow, is in the water drop shape with high inclination, low on the small end and high on the big end, and the convex height of one end is lower than the convex height of the other end; the air vents are arranged on the rotational convex part.

[0009] The fan obtains power supply from the dry battery, external power supply or their combination, and achieves airflow control through mechanical control equipment or touch control equipment.

[0010] The fan obtains power supply from the dry battery, and achieves airflow control through mechanical control equipment.

[0011] The mechanical control equipment contains the potentiometer switch knob on external wall of the case, the potentiometer switch is set on the potentiometer switch knob, and the potentiometer switch achieves electrically controlled connection with the fan through power line; a working indicator lamp is installed on the potentiometer switch knob.

[0012] A barbecue grate or a barbecue plate is placed on the bracket.

[0013] The invention, after improvement on the above structure, sets one or more fans on the base, the fan obtains the driving power supply from the dry battery, the potentiometer switch knob is set on the outer wall of case, and the fan adjusts the current through the potentiometer switch knob, so as to control the airflow strength of the fan, thus greatly facilitating the user to use, meanwhile, since the fire is adjustable, the cooked food tastes better, has high nutritional content and is more healthy to eat; the air duct forms a included angle with the longitudinal direction of the barbecue grill, the fan is placed on the lower side of the ignition pan and is connected to a sidewall or the side of the ignition pan

through the tilted air duct, the airflow generated by the fan enters the ignition pan through the air duct, and forms the rotational airflow in the ignition pan, so as to make the burning of charcoal in the charcoal tray connected to the ignition pan more sufficient and make the fire more fierce; moreover, the bottom of the charcoal tray corresponding air duct is arranged with several air vents, which are distributed in spiral shape, the rotational convex part, arranged at the bottom of the charcoal tray along the direction of rotational airflow, and the rotational convex part is tilted, low in front end and high behind, and the convex height of one end is lower than the convex height of the other end, and the air vents are arranged on the rotational convex part, to make the air flow from the air duct smoother and form the rotational airflow, and make the fire more uniform and make the burning of charcoal further more sufficient, thus reducing the emission of smog; and effectively solving the problems with present technology such as non-uniform temperature, non-adjustable fire, and the heavy smoke due to the insufficient burning of charcoal when the barbecue grill is working. The invention features the simple and reasonable structure, low manufacturing cost, uniform and adjustable fire, simple and easy operation, reliable performance, energy-saving and environmentally-friendliness, clean and sanitary, sufficient burning of charcoal and no smoke, and high thermal efficiency, so the user may truly realize smokeless barbecue, moreover, the main components made of stainless steel, are durable and strongly practical.

DESCRIPTION OF THE DRAWINGS

[0014]

Figure 1.1 and 1.2	is the structure diagram of an example of the invention.
Figure 2.1 and 2.2	is the structure diagram of a profile of an example of the invention.
Figure 3.1 and 3.2	is the structure diagram of another profile of an example of the invention.
Figure 4.1 and 4.2	is the structure diagram of the bracket.
Figure 5.1, 5.2 and Figure 6	are the structure diagram of the charcoal tray.

SPECIFIC IMPLEMENTATION METHOD

[0015] The following further describes the invention in combination with the drawings and examples.

[0016] As shown in Figure 1 to Figure 6, the smokeless barbecue grill comprises a base 1 and the case 2 placed above the base 1, the case 2 is a hollow structure and above it there is a bracket 3 containing a charcoal tray 4; one or more fans 5 are arranged on the base 1; the fan 5 of the barbecue grill is provided with one or more air ducts 6, which are tilted and bended and form a included angle with the longitudinal direction of the barbecue grill.

[0017] In the example, two fans 5 are arranged on the base 1, the fans 5 of the barbecue grill are provided with two air ducts 6, and the two fans 5 and air ducts 6 are arranged oppositely.

[0018] An ignition pan 7 is arranged between the bracket 3 and the charcoal tray 4, the fan 5 is laterally below, on the low-side of, the ignition pan 7, and is connected to the side of the ignition pan 7 through the tilted air duct 6, the airflow generated by the fan 5 enters the ignition pan 7 through the air duct 6, and forms the rotational airflow in the ignition pan 7, thus making the charcoal in the charcoal tray 4 connected to the ignition pan 7 burn more sufficiently and make the fire more fierce.

[0019] Several air inlets 3.1 are arranged in corresponding air duct 6 of the bracket 3, the air inlet 3.1 may be arranged on the wall of bracket 3, or on the bottom of the bracket 3; the bearing part 3.2 is also arranged on the bracket 3, and the charcoal tray 4 is on the bearing part 3.2 of bracket 3, and its bottom and the bottom of bracket 3 form the ignition pan 7.

[0020] The bottom of the charcoal tray 4 corresponding air duct 6 is arranged with several air vents 4.1, the air vents 4.1 are distributed in spiral shape, the rotational convex part 4.2, arranged at the bottom of the charcoal pan 4 along the direction of rotational airflow, is in the water drop shape with high inclination, low on the small end and high on the big end, and the convex height of one end is lower than the convex height of the other end, and the air vents 4.1 are arranged on the rotational convex part 4.2; the air from the air duct 6 flows smoother through the air vents 4.1 and the convex part 4.2, and forms the rotational airflow, thus making the airflow more uniform and make the charcoal burn more sufficient, so as to reduce the emission of smog.

[0021] In the above structure, the fan 5 obtains power supply from the dry battery, external power supply or their combination and achieves airflow control through mechanical control equipment or touch control equipment, thus greatly facilitating the user to use, meanwhile, since the fire is adjustable, the cooked food tastes better, has high nutritional content and is more healthy to eat.

[0022] Specifically, the fan 5 obtains power supply from the dry battery, and achieves airflow control through mechanical

control equipment. The mechanical control equipment contains the potentiometer switch knob 8 on external wall of the case 2, the potentiometer switch 9 is set on the potentiometer switch knob 8, and the potentiometer switch 9 achieves electrically controlled connection with the fan 5 through power line; a working indicator lamp 10 is installed on the potentiometer switch knob 8, to facilitate the user to observe the working state of the barbecue grill.

[0023] A barbecue grate or barbecue plate 11 is placed on the bracket 3.

[0024] To extend the service life of the barbecue grill, the above main components made of stainless steel, are durable.

[0025] The above describes the optimized scheme of the invention, and its simple modification or alteration by ordinary technicians of the field all falls within the protection range of the invention.

Claims

1. A smokeless barbecue grill, comprising a base (1) and a case (2) placed above the base (1), **characterized in that** the case (2) comprises a hollow structure and a bracket (3) being arranged above the case (2), wherein the bracket (3) contains a charcoal tray (4); wherein one or more fans (5) are arranged on the base (1); the fan (5) for the barbecue grill being provided with one or more air ducts (6), wherein said one or more air ducts (6) are tilted and bended and form an included angle with a longitudinal direction of the barbecue grill.

2. The smokeless barbecue grill according to Claim 1, **characterized in that** an ignition pan (7) is arranged between the bracket (3) and the charcoal tray (4), the fan (5) being arranged laterally below the ignition pan (7) and being connected to a sidewall of the ignition pan (7) through the tilted air ducts (6), wherein an airflow is generated by the fan (5) enters the ignition pan (7) through the air ducts (6) and forms rotational airflow within the ignition pan (7).

3. The smokeless barbecue grill according to Claim 2, **characterized in that** a plurality of air inlets (3.1) of the bracket (3) are arranged in corresponding ones of the air ducts (6), wherein a bearing part (3.2) is arranged on the bracket (3), wherein the charcoal tray (4) is arranged on the bearing part (3.2) of the bracket (3), and the ignition pan (7) is arranged between a bottom of the charcoal tray (4) and a bottom of the bracket (3).

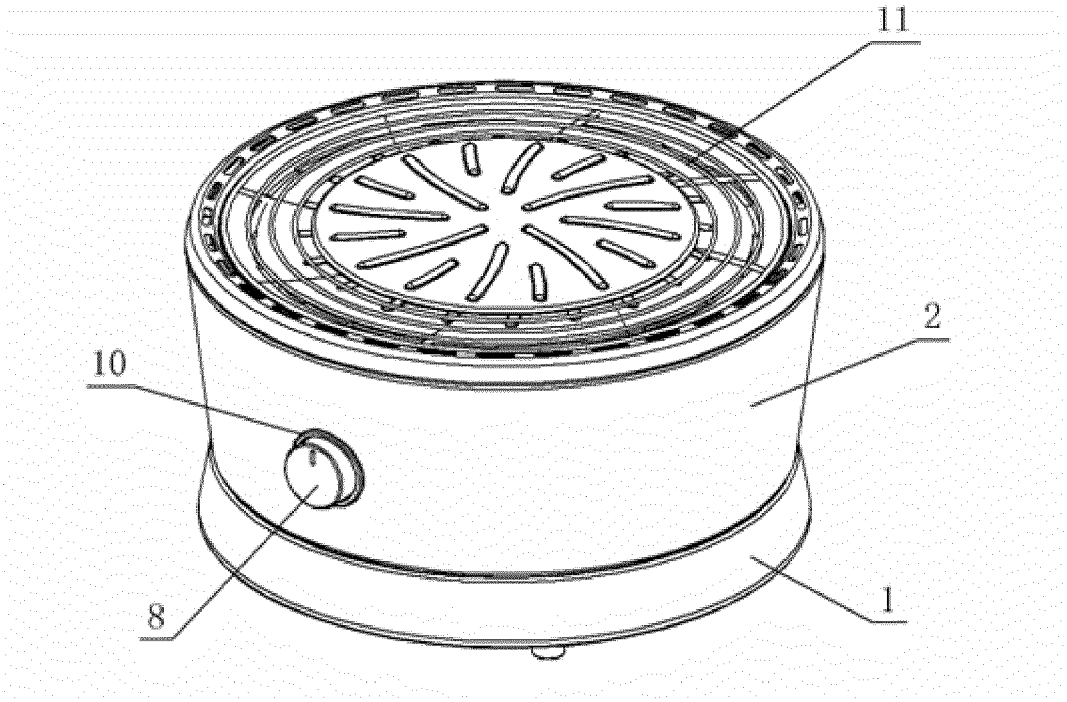
4. The smokeless barbecue grill according to Claim 3, **characterized in that** the bottom of the charcoal tray (4) corresponding the ignition pan (7) is arranged with a plurality of air vents (4.1), the air vents (4.1) are distributed in a spiral shape, wherein a rotational convex part (4.2) is arranged at the bottom of the charcoal tray (4) along the direction of rotational airflow and is arranged in an inclined water drop shape with a small end and a big end, wherein in a cross-sectional view the rotational convex part (4.2) is low on the small end and high on the big end, such that a convex height of one end is lower than a convex height of another end; wherein a part of the plural air vents (4.1) are arranged on the rotational convex part (4.2).

5. The smokeless barbecue grill according to any one of Claims 1-4, **characterized in that** the fan (5) obtains power supply from a dry battery, an external power supply or a combination thereof, and achieves airflow control through a mechanical control equipment or a touch control equipment.

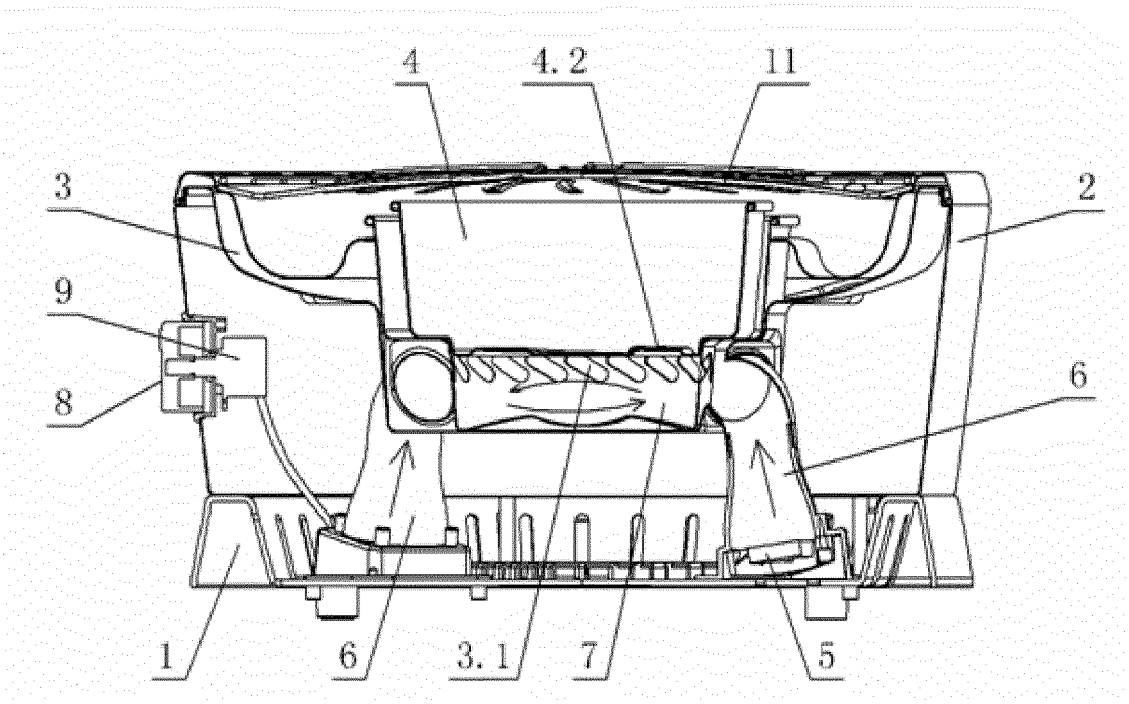
6. The smokeless barbecue grill according to Claim 5, **characterized in that** the fan (5) obtains power supply from the dry battery, and achieves airflow control through the mechanical control equipment.

7. The smokeless barbecue grill according to Claim 6, **characterized in that** the mechanical control equipment contains a potentiometer switch knob (8) on an external wall of the case (2), a potentiometer switch (9) is set on the potentiometer switch knob (8), and the potentiometer switch (9) achieves an electrically controlled connection with the fan (5) through a power line; a working indicator lamp (10) is installed on the potentiometer switch knob (8).

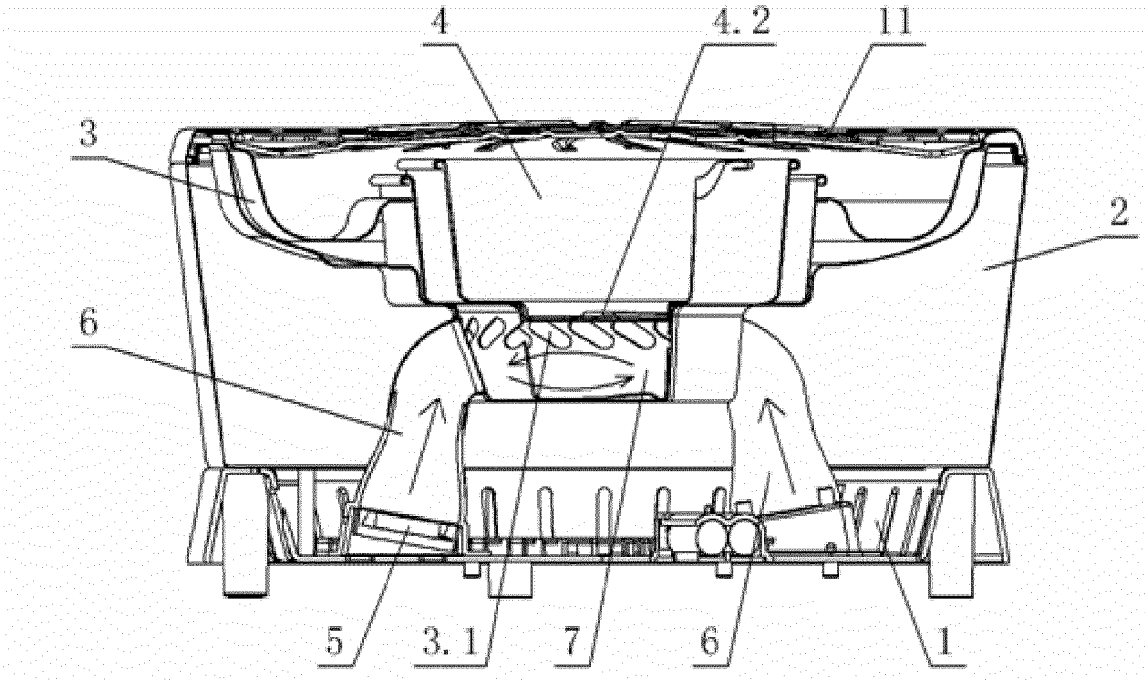
8. The smokeless barbecue grill according to Claim 7, **characterized in that** a barbecue grate or a barbecue plate (11) is placed on the bracket (3).



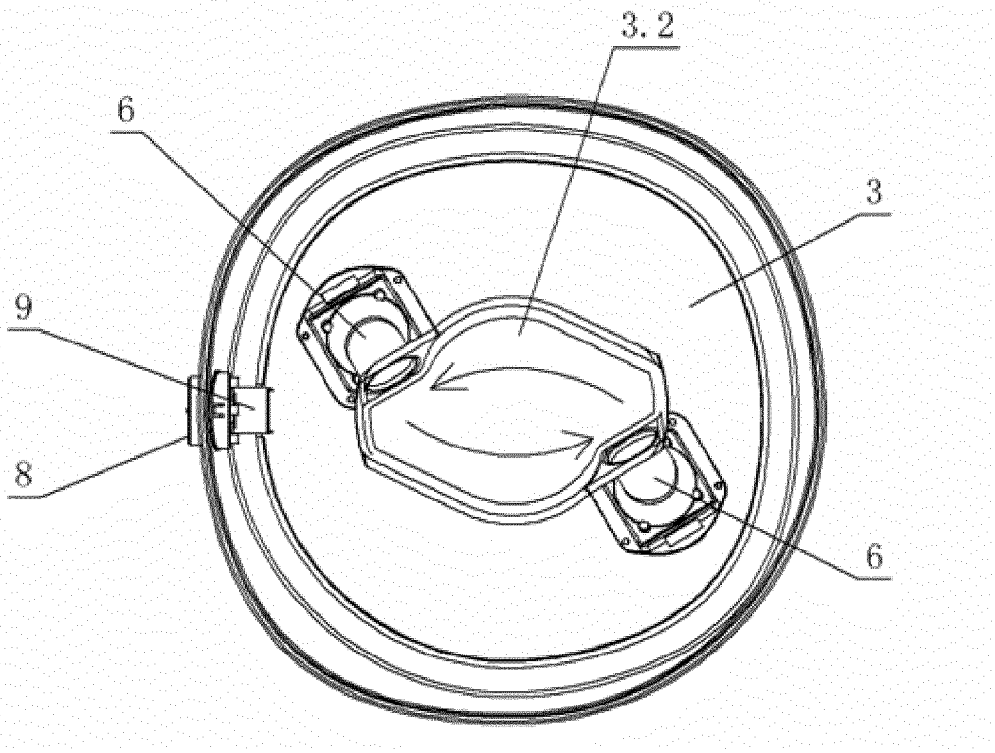
Figur 1.1



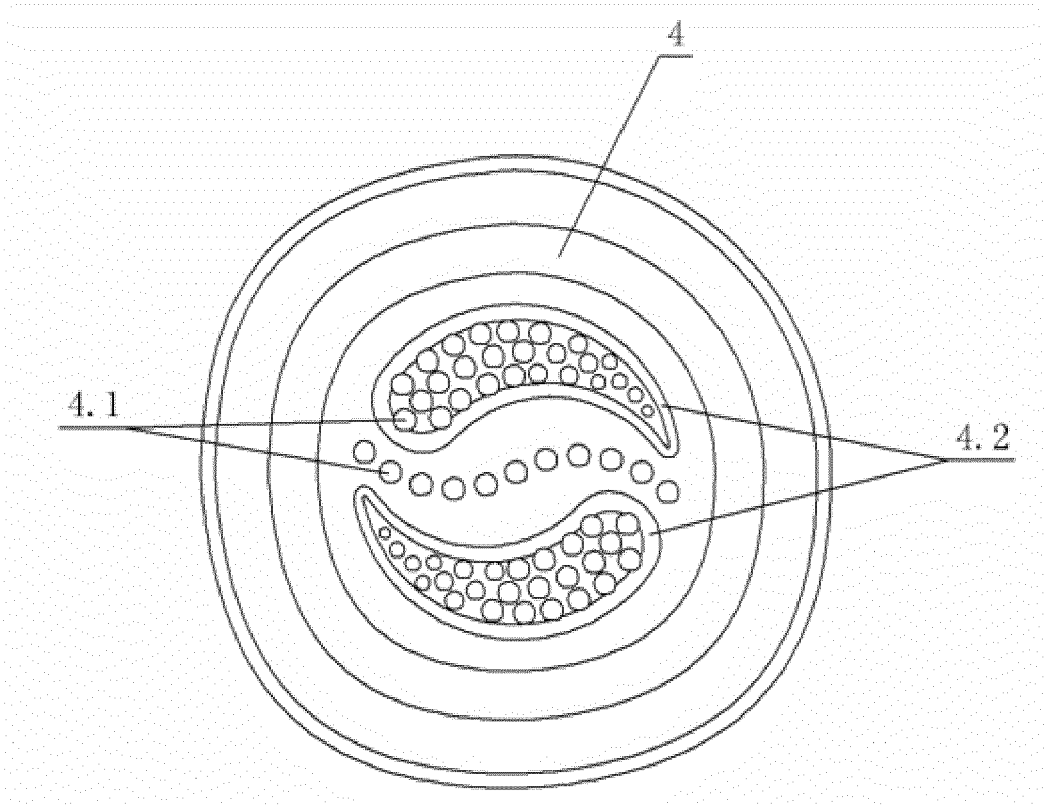
Figur 2.1



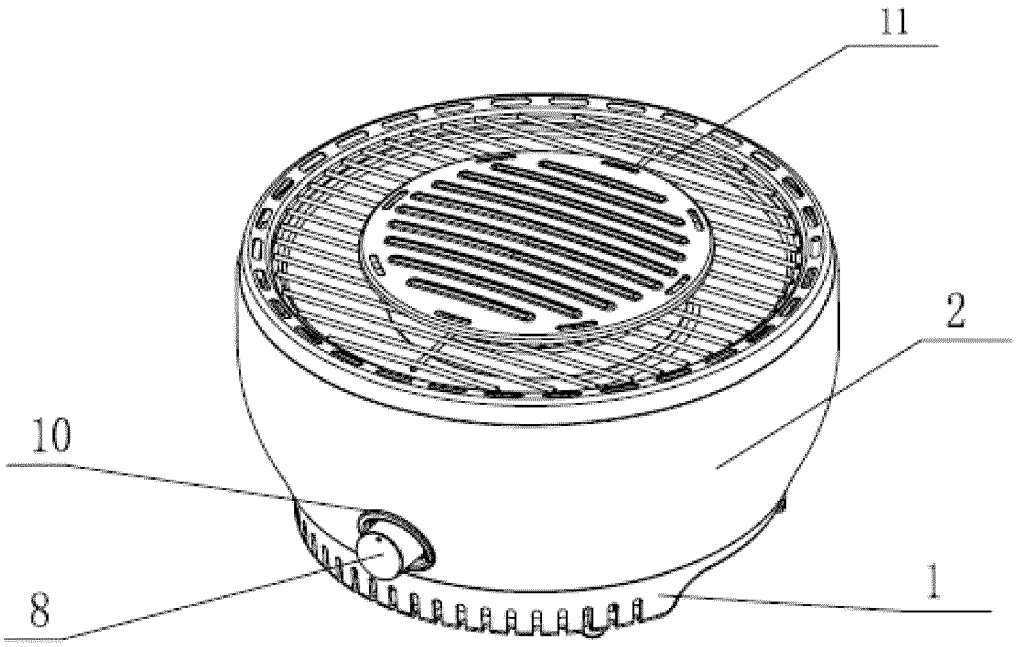
Figur 3.1



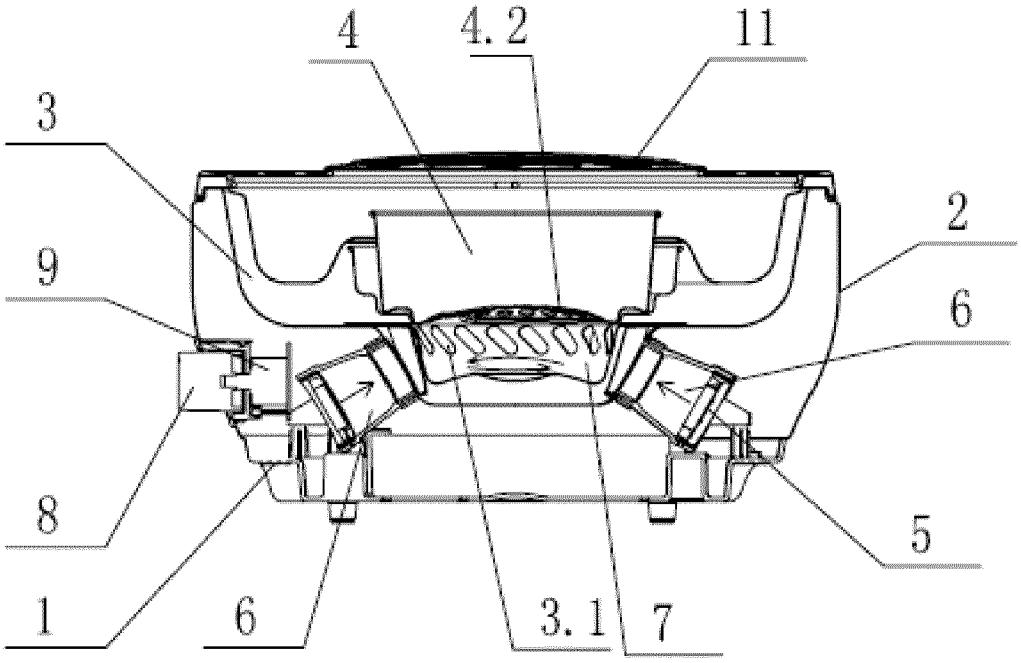
Figur 4.1



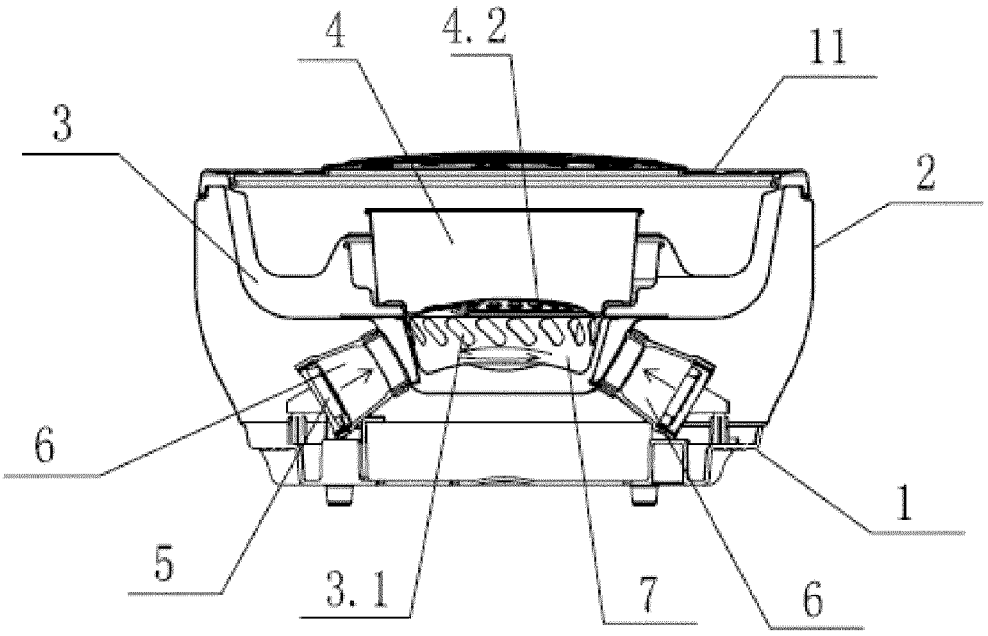
Figur 5.1



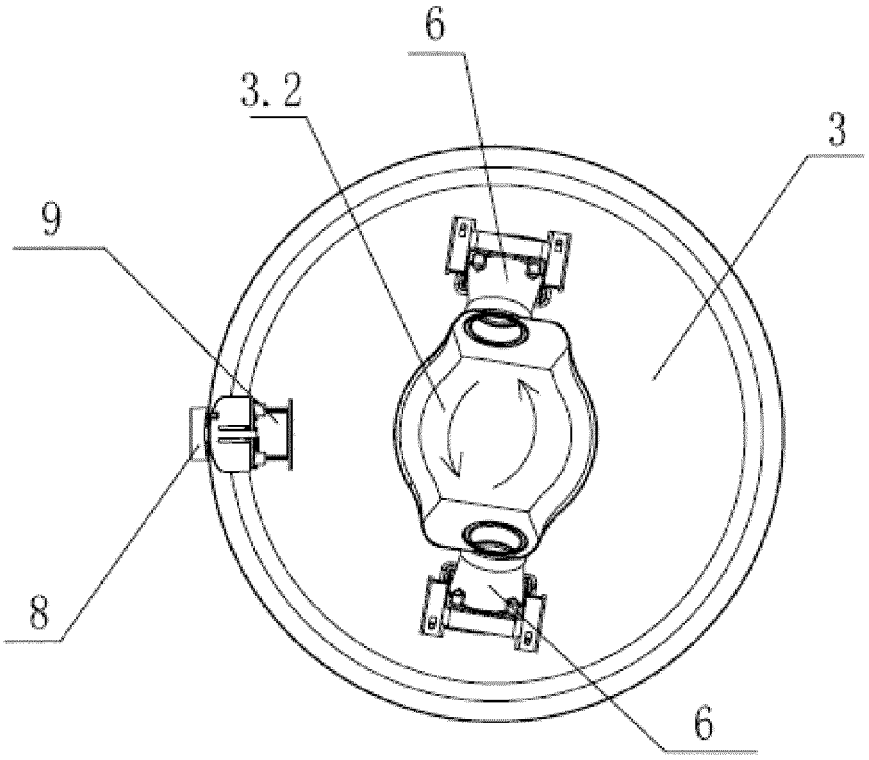
Figur 1.2



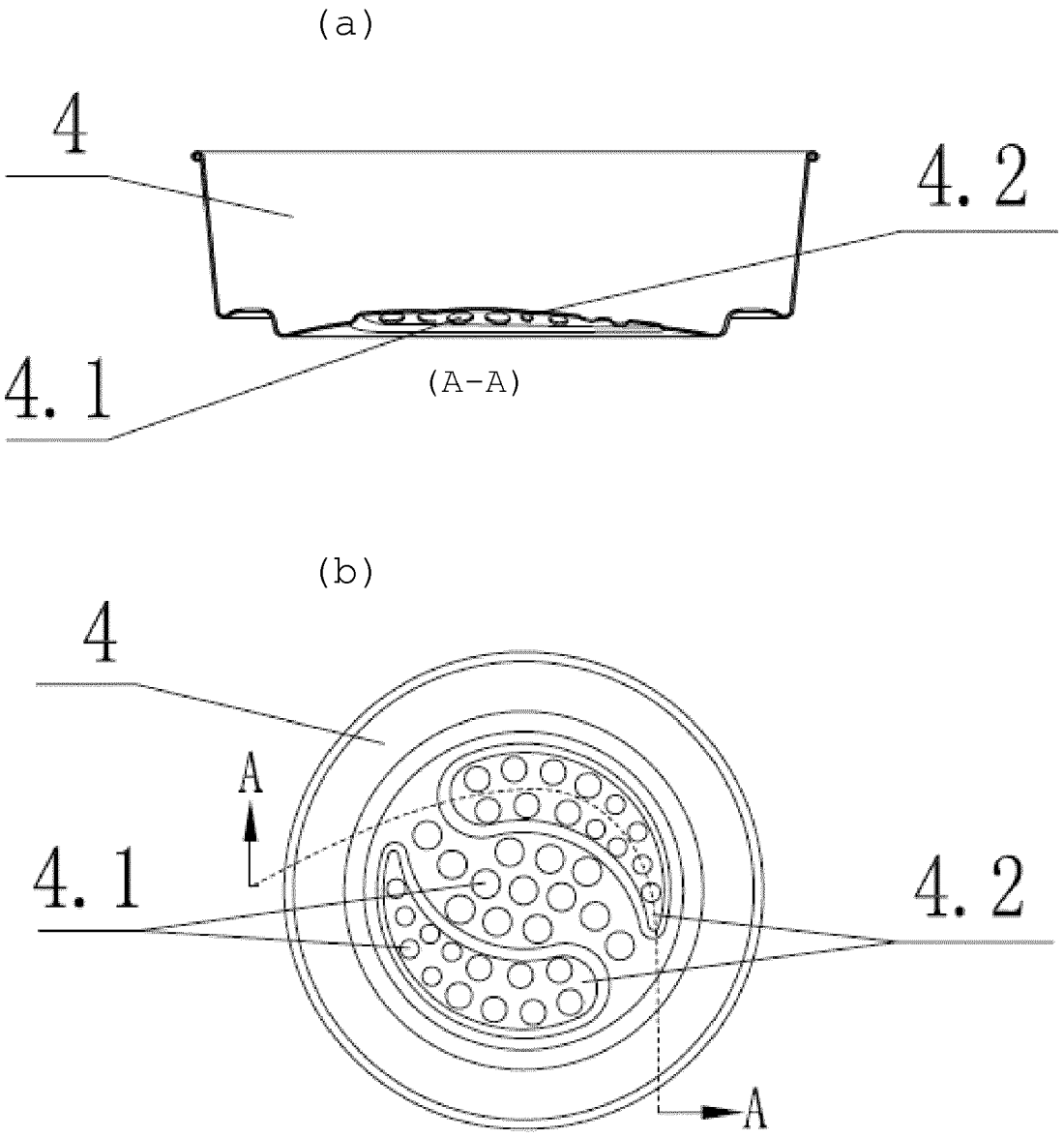
Figur 2.2



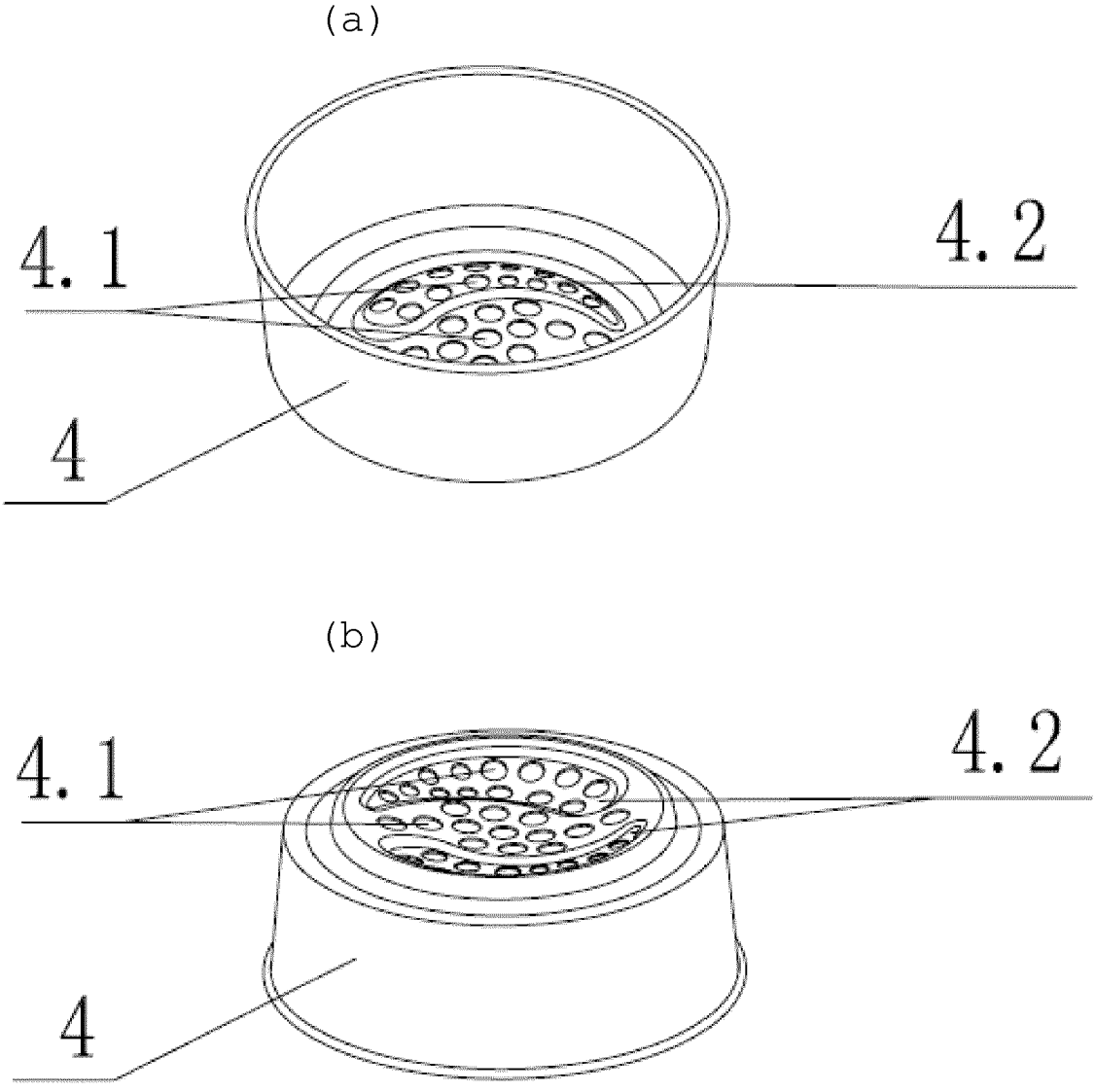
Figur 3.2



Figur 4.2



Figur 5.2



Figur 6

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EUROPEAN SEARCH REPORT

Application Number
EP 15 18 0579

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X Y	FR 2 860 965 A1 (LE BLEIS DIDIER ROLAND EMILE [FR]) 22 April 2005 (2005-04-22) * the whole document * -----	1-3,5-8 4	
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Y	WO 2014/042342 A1 (KIM YOUNG BONG [KR]) 20 March 2014 (2014-03-20) * abstract; figures * -----	4	

TECHNICAL FIELDS SEARCHED (IPC)

A47J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 December 2015	Acerbis, Giorgio

CATEGORY OF CITED DOCUMENTS

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